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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/835,498	04/16/2001	Ki Young Oh	P/2292-43	5377

2352 7590 06/18/2002
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EXAMINER

SONG, MATTHEW J

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 06/18/2002

5

Please find below and/or attached an Office communication concerning this application or proceeding.

MEV

Office Action Summary	Application No.		Applicant(s)	
	09/835,498		OH ET AL.	
	Examiner		Art Unit	
	Matthew J Song		1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 5-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Election/Restrictions

1. Claims 5-11 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 4.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sivaramakrishnan et al (US 5,879,574) in view of Adams et al (US 5,085,887)

Sivaramakrishnan et al discloses a Chemical vapor deposition (CVD) apparatus includes a susceptor **25** installed inside the reactive chamber, a heater/lift assembly **30** and a remote microwave plasma system **55** to deposit plasma enhanced CVD films by inputting deposition reactive gases into system **55** via input line **57** (col 14, ln 20-25). Sivaramakrishnan et al also discloses for plasma processes the CVD apparatus will include a gas feed-through box housing gas passages **83, 85** to enable the application of high voltage RF power to the gas box (col 26, ln 40-45). Sivaramakrishnan et al also discloses a vacuum pump is activated to generate vacuum pressure within a pumping channel, thereby drawing the process gases and plasma residue out of

Art Unit: 1765

the processing chamber through a exhaust port **361** (col 35, ln 33-37 and Fig 4 and 8), where the exhaust port reads on applicant's gas outlet. Sivaramakrishnan et al also discloses a process selector subroutine **153** identifies the desired set of process parameters needed to operate the process chamber, where the process parameters include process gas composition and flow rates, temperature, pressure, plasma composition and chamber wall temperature (Fig 1D and col 17, ln 20-35). Sivaramakrishnan et al discloses a process gas control subroutine **163** for controlling the process gas composition and flow rates, which reads on applicant's gas supply controller (col 18, ln 50-67) and heat control subroutine **167** for controlling the temperature (col 19, ln 58-67), which reads on applicant's temperature controller.

Sivaramakrishnan et al does not disclose a reactive chamber consisting of an upper container and a lower container junctioned by an O-ring.

In a reaction vessel apparatus for processing semiconductor wafers, Adams et al teaches a thermal reactor **10** is formed by a reactor vessel **10V**, defining a wafer reactor chamber **10C** with a wafer cover member **12** with a central window **12W** and a O-ring **15B** (Fig 1), where the region above the O-ring reads on applicant's upper container and the region below reads on applicant's lower chamber. It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify Sivaramakrishnan et al with Adams' reactor vessel because the reactor vessel has a window portion suitable for both reduced pressure and ambient pressure applications (col 1, ln 60-67)

Referring to claim 3, the combination of Sivaramakrishnan et al and Adams et al teaches a heater/lift assembly **30**.

Art Unit: 1765

Referring to claim 4, the combination of Sivaramakrishnan et al and Adams et al teaches a vacuum pump attached an exhaust port.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sivaramakrishnan et al (US 5,879,574) in view of Adams et al (US 5,085,887) as applied to claim 1 above, and further in view of Amano et al (US 5,948,485).

The combination of Sivaramakrishnan et al and Adams et al teaches all of the limitations of claim 2, except a grounding unit connected to the upper container and lower container to clean the inside of the chamber and a RF power generator connected to the susceptor to apply an RF power to the susceptor.

In an apparatus for plasma deposition, Amano et al teaches a plasma process apparatus includes a container 2 divided into two parts, a plasma chamber 21 and a reaction chamber 22, where the vacuum container 2 is grounded at zero potential. Amano et al also teaches aluminum stage 52 for use as a susceptor and the stage is connected with a radio-frequency power supply unit 61 for plasma lead-in through a blocking capacitor. It would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Sivaramakrishnan et al and Adams et al with Amano's susceptor connected with a radio-frequency power supply because ions are confined to the target object on the susceptor (col 5, ln 1-10). Also it would have been obvious to a person of ordinary skill in the art at the time of the invention to modify the combination of Sivaramakrishnan et al and Adams et al with Amano's grounded container because it protects the integrity of the chamber and the chamber circuitry from any static discharge or induced electrical currents that may build in or on the chamber.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Fong et al (US 5,902,404) teaches a metal cover may be grounded to protect the integrity of a chamber and a chamber circuitry from any static discharge or induced electrical currents that may build in or on a chamber (col 4, ln 30-36).

Hirano et al (US 5,698,070) teaches a susceptor **4**, a RF power source connected to the susceptor **4**, a vacuum pump attached to an exhaust pipe **23**, an O-ring **55**, a lower chamber **21**, a upper chamber **22**, gas sources **60** and **70** controlled by a controller **69**, and a lifter mechanism **218**.

White (5,582,866) teaches a chamber **100** made of two parts; a lid portion **102** and a processing chamber body portion **104**, where the region above the O-ring reads on applicant's upper container and region below the O-ring reads on applicant's lower container. White also teaches a vacuum is maintained in the chamber when the lid is closed by means of a single O-ring **106** (Fig 2 and col 3, ln 5-15)

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J Song whose telephone number is 703-305-4953. The examiner can normally be reached on M-F 9:00-5:00.

Art Unit: 1765

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin L Utech can be reached on 703-308-3868. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

mjs
June 12, 2002

Matthew J Song
Examiner
Art Unit 1765



ROBERT KUNEMUND
PRIMARY EXAMINER